vanic element, conclusively ascertained that the conductor was in perfect working order right up to the top of the mountain, we began the descent and the return journey as rapidly as possible. We had no other choice, as the storm and rain which every moment increased precluded every possibility of doing more at that time. I had, however, some consolation in what already was done, my apparatus standing 1900 feet above the disks.

I left all the instruments to be used in connection with the experiments at Mogilsau in hopes that the weather would soon improve and allow me to return. The journey to Reykjavik was performed in a downpour of rain and a great storm.

As I had anticipated, the "utströmnings" apparatus has up to the present shown no signs of life whatever. I can see it plainly with a good telescope from my residence, and thus ascertain that it is in perfect order. In addition, I have just received a message from Mogilsau, informing me that the lower part is in perfect order too. Still during the few favourable nights we have as yet experienced not the slightest luminosity has appeared above the point in question.

If this be a negative result, it is a result, nevertheless, of considerable scientific interest.

The aurora borealis here has during the last few months been far more distinct in its appearance than during the first half of the winter. There is certainly, when the sky is sufficiently free from clouds, here and there a faint indication that the phenomenon does still exist, but such signs of life are very weak and limited.

I have at present no knowledge whether the aurora borealis has displayed less activity in other quarters of the globe during the winter than is generally the case, as letters take a long time from and to this island, but the Reykjavik people contend that the phenomenon displays usually far more energy and intensity than has been the case this winter. I am at present inquiring in various parts of the island whether the absence of the aurora borealis this winter has been noticed as generally remarkable, or its appearance is the usual one in Iceland.

In my last communication to NATURE I intended to have mentioned that I was curious to know what the effect would be of a sufficiently strong aurora covering the moon's disk. During the winter I have had several opportunities of observing auroræ projecting over the disk of the moon when full, but nothing more unusual is seen than the light of the aurora borealis disappearing within a radius of 5° to 10° around the moon. But in the appearance of the latter there is no difference.

Reykjavik, March SOPHUS TROMHOLT

A CARNIVOROUS PLANT PREYING ON VERTEBRATA

AN interesting discovery has been made during the last week by Mr. G. E. Simms, son of a well-known tradesman of Oxford. It is that the bladder-traps of *Utricularia vulgaris* are capable of catching newly-hatched fish and killing them. Mr. Simms brought to me for examination a specimen of Utricularia in a glass vessel, in which were numerous young roach newly hatched from a mass of spawn lying at the bottom. Numbers of these young fish were seen dead, held fast in the jaws of the bladder-traps of the plant. I had never seen Utricularia before, and am indebted to my colleague Prof. Burdon Sanderson for the identification of the plant and a reference to Cohn's researches on it. Mr. Simms supplied me with a fresh specimen of Utricularia in a vessel with fresh young fish and spawn, and in about six hours more than a dozen of the fish were found entrapped. Most are caught by the head, and when this is the case the head is usually pushed as far into the bladder as possible till the snout touches its hinder wall. The two dark black eyes of the fish then show out conspicuously through the wall of the bladder. Rarely a specimen is seen caught only by the tip of the snout. By no means a few of the fish are, however, captured by the tail, which is swallowed, so to speak, to a greater or less distance, and I have one specimen in which the fish is caught by the yelk sac. Three or four instances were observed in which a fish had its head swallowed by one bladder-trap, and its tail by another adjacent one, the body of the fish forming a connecting bar between the two bladders.

I have not been able to see a fish in the actual process of being trapped, nor to find one recently caught, and showing by motion of the fore part of its body signs of life. All those trapped were found already dead, but I have had no opportunity of prolonged observation, and it will be remembered that Mr. Darwin, in his account of the trapping of Crustacea, worms, &c., by Utricularia, states that he was not able to observe the actual occurrence of the trapping of an animal, although Mrs. Treat of New Jersey often did so. I think it probable that the fact described by Mr. Darwin, and which is easily verified, that the longer of the two pairs of projections composing the quadrifid processes by which the bladders of Utricularia are lined "project obliquely inwards and towards the posterior end of the bladder," has something to do with mechanism by which the small fish become so deeply swallowed so to speak. The oblique processes, set all towards the hinder end of the bladder, look as if they must act together with the spring valves of the mouth of the bladder in utilising each fresh struggle of the captive for the purpose of pushing it further and further inwards. On cutting open longitudinally some of the bladders containing the heads and foreparts of the bodies of fish, and examining their contents, I found the tissues of the fish in a more or less slimy deliquescent condition, no doubt from decomposition, for Mr. Darwin failed to detect any digestive process in Utricularia. The quadrifid processes were bathed in the slimy semi-fluid animal substance, and the processes themselves appeared to contain abundance of fine granular matter, possibly the result of absorption, but the large quantity of surrounding animal matter present rendered the observation uncertain. The usual swarms of Infusoria were present in the decomposing matter.

Specimens of the Utricularia with the little fish fast in the bladder-trap, and their heads or tails hanging out, can be well preserved in spirits, and show the conditions well, notwithstanding that the plant becomes colourless, and there is no longer the marked contrast between the glistening white dead fish and the green bladders, which in the fresh condition renders the combination of the trap and prey conspicuous.

Mr. Simms, by whose permission I write this, intends shortly to publish an account of his observations himself. I have advised him to endeavour to prepare spirit specimens of Utricularia plants with numerous trapped fish *in situ* for sale to those interested in the matter who may care to apply for them. His address is 37, Broad Street, Oxford. H. N. MOSELEY

NOTES

M. PASTEUR read to the Academy of Sciences on Monday an account of his experiments on rabies. He maintains that he has twenty dogs which he has rendered insusceptible to the disease, and which, with twenty ordinary dogs, he is prepared to have bitten by a number of dogs in a rabid state. A Commission has been appointed by the French Government to test M. Pasteur's conclusions, the immense importance of which, if established, must be evident to every one. Eminent physiologists maintain, however, that M. Pasteur is far from having proved his position, and that it would be rash to give any positive opinion upon the subject until the experiment which he suggests has been made. We await the full report of M. Pasteur's paper before saying more upon

it. The following are the members of the Government Commission:—Dr. Beclard, the Dean of the Paris Faculty; M. Paul Bert, Professor of General Physiology at the Faculty of Sciences; M. Bouley, Professor of Comparative Pathology at the Museum of Natural History; Dr. Villemin, Professor of Clinical Surgery at the Military Pharmacy; Dr. Vulpian, Professor of Comparative and Experimental Pathology at the Paris Faculty of Medicine; and M. Tisserand, Director of the Agricultural Department.

PROF. HUXLEY has undertaken to be President of the Marine Biological Association. It is stated that Plymouth will probably be selected as the site of the first laboratory and experimental station erected by the Association. The Duke of Argyll, the Duke of Sutherland, and Dr. Gwyn Jeffreys, F.R.S., have given their names as vice-presidents. Mr. Chamberlain has joined the Association, and subscribed twenty guineas towards building the sea-coast laboratory. Mr. Thomasson, M.P. for Bolton, has subscribed 100*l*.

WE understand that the Scottish Fishery Board have obtained sufficient funds to enable Prof. McIntosh to carry on a number of important preliminary inquiries at St. Andrew's as to the possibility of increasing by artificial means the supply of flat-fish, and also as to the spawning habits and life-history of food fishes in general. This work is in the meantime being carried on in a temporary building which for some time served as a hospital. It is hoped, however, that when the importance of the work and the many advantages which St. Andrew's offers for a marine station are recognised, that both in the interest of science and by way of developing further the great fishing industry, a well-equipped laboratory and hatching station will be provided. Dr. McIntosh has already succeeded in hatching from artificially fertilised eggs the flounder, whiting, haddock, and cod, and in determining the nature of the eggs of the gurnard and other fish. Prof. Hubrecht of Utrecht is expected to work at the St. Andrew's Marine Station during the autumn.

THE Davis Lectures upon zoological subjects will be given in the lecture-room in the Zoological Society's Gardens, Regent's Park, on Thursdays, at 5 p.m., commencing June 5, as follows:—June 5, Man, zoologically considered, by Prof. Flower, LL.D., F.R.S.; June 12, Hands and feet, by Prof. Mivart, F.R.S.; June 19, Instinct, by G. J. Romanes, LL.D., F.R.S.; June 26, Hedgehogs, moles, and shrews, by Prof. Parker, F.R.S.; July 3, Dogs, ancient and modern, by J. E. Harting, F.L.S.; July 10, Birds' nests, by Henry Seebohm, F.L.S.; July 17, Reptiles, by P. L. Sclater, F.R.S.

THE Municipal Council of Paris has, at the instigation of the Société d'Anthropologie, given its sanction to the projected erection of a monument to Paul Broca. The spot chosen is a triangular plot of ground on the Boulevard Saint-Germain, immediately opposite the entrance gate of the new wing of the École de Médecine. A Commission has been appointed to decide upon the terms and conditions to be observed by those who desire to enter into the competition shortly to be opened for the honour of executing the work.

THE eighth meeting of the French National Congress of Geography will open on August 8 at Toulouse, where the local Geographical Society is organising an international exhibition, to be held from June 1 to August 15.

IN reference to his "Prize Records of Family Faculties" Mr. F. Galton writes to the *Times*:—"Permit me, as the last day for sending in the records has just gone by, to send you a brief estimate of the value of the response to my offer, so far as a very hasty inspection warrants. This value has far exceeded my expectations. I have received very little trash, and upwards of 150 good records of different families. Many of these are admirably drawn up; concise, full of information, and offering numerous opportunities of verification. As each of these returns refers to fourteen direct ancestors of the children of the family, and to many of the brothers and sisters of each of them, the mass of anthropological material may be inferred. It certainly refers to more than 5000 persons, and as the data are all entered in my bound tabular forms, the records form a long row of thin quarto volumes, severally labelled, and easily accessible. It is a unique anthropological collection. The writers are chiefly persons of the upper and middle classes of society; they are male and female in nearly equal proportions, and the two sexes write equally well, so far as I can thus far judge. The letters that accompanied the records are full and friendly, expressing a trust that I can assure them will not be misplaced of my treating the information as strictly confidential. In many cases they express the great interest that the inquiry into their own family history has been to them. Permit me to add that I do not think it possible to determine the prizes in much less than two months, and that besides publishing the awards I propose to send a copy of them to the private address of every substantial competitor."

No. 16 of the Bibliographical Contributions of the Library of Harvard University consists of a classified index to the maps in *Petermann's Geographische Mittheilungen*, 1855-81, by Mr. Richard Bliss. The index consists of 1340 entries, and has evidently been made with the greatest care. Mr. Bliss has done a work of great utility.

IN two papers entitled "Le Ceneri dei Volcani di Giava supposta Causa dei Bagliori Crepuscolari," and "L'Isola di Giava ed i Crepuscoli del Novembre e Decembre 1883," recently published at Vicenza, Alvise G. Mocenigo discusses the various theories put forward to explain the late remarkable crepuscular lights that have been observed in every part of the world. He thinks the phenomena should probably be attributed to extra-telluric, interplanetary, or cosmic conditions naturally recurring only at long intervals, and which may possibly have never before arisen since the appearance of man on the earth.

THE Mitchell Library at Glasgow still labours under that most satisfactory of difficulties—want of room in which to carry on the amount of work it could otherwise do. Seldom has this want been more heavily felt than here, where not one-tenth of its founder's bequest of 70,000*l*. has yet been expended, while an additional legacy of 11,500*l*., exceeding the entire expenditure in books hitherto, lies unused for sheer want of space to make available any such treasures as it would secure. The moderate increase of between 4 and 5 per cent. in its total issues of books is reasonably attributed to this limitation. Glasgow has not yet adopted the Free Libraries Act, but the Corporation has placed the complete publications of the Patent Office at another library founded by Walter Stirling, a merchant of that city, in 1791. As a reference library this also is free, and a recent reorganisation has reduced the subscription to its circulating department to 10*s*. 6*d*. a year, or half that where four members of a firm enter together. This arrangement has led to a large increase of readers at both branches of this library, but that has not interfered with the use made of the Mitchell Library, and it is satisfactory to find in the Report of the latter a notice in large type referring all persons who wish to take books home to the moderate terms of the sister establishment. Still the subscribers to the latter form but a small fraction of the numbers who would be sure to avail themselves of rate-supported libraries in a great town like Glasgow, and the Mitchell Report strongly and wisely urges the adoption of the Act.

VISITORS to Canada during the forthcoming meeting of the British Association will find many useful hints and considerable practical guidance in Mr. T. Greenwood's "Tour in the United States and Canada." Mr. Greenwood went out and back in six weeks, and evidently made good use of his time.

THE demonstration by Dr. Herbert Carpenter of some points in the minute anatomy of Crinoids at the last meeting of the

Royal Microscopical Society was of great interest, and gave promise that his forthcoming *Challenger* Report will be of high importance as a contribution to the morphology of these Echinoderms. His exhibition of microscopic preparations of the system of cords which he and his father assert to be of a nervous nature was supplemented by an interesting account by Dr. Carpenter, C.B., of the observations and experiments which had led to the conviction as to their nervous nature, which is gradually being accepted by other investigators.

M. MASCART, Professor at the College of France, will give a discourse at the Royal Institution on Friday evening, May 30, the subject being "Sur les Couleurs."

WE regret to learn of the death of Mr. Henry Baden Pritchard, whose name has been so long connected with the *Photographic News*, and with the photographic world in general.

A STRONG earthquake shock causing some damage was felt last week at Panderma and Erdek in the province of Broussa, Asia Minor. Two slight shocks, unattended by any damage, have occurred at Balikesri in the same province.

AT a meeting of the Governors of North Wales University, held last week at Bangor, Mr. Henry Rudolf Reichel, M.A., Fellow of All Souls College, Oxford, was elected Principal of the College.

THAT the railway should be the means of enriching the flora of a district seems strange. This has, however, been shown to be the case in Arbrå parish, in the province of Helsingland, Sweden. Thus, since the extension of the Great Northern main line into this province in 1878, no less than seven new species of plants have immigrated along the line. They are *Galium mollugo*, *Plantago lanceolata*, *Euphorbia helioscopia*, *Dactylis glomerata*, *Bunias orientalis*, *Avena fatua*, and an American importation, *Rudbeckia hirta* (L.). That these must owe their introduction to the railway is clearly demonstrated by the fact that in spite of the closest scrutiny these plants have never before been found in this district, and that they are even now confined to the railway embankment and its immediate vicinity. The four first-named have, in all probability, only come from the parishes south of Arbrå, but the *Bunias orientalis* and *Avena fatua* have no doubt travelled along the line all the way from the province of Gestrikland, to whose flora they belong. The last-named, *Rudbeckia hirta*, which hails from the eastern part of the United States, seems to follow in the track of the navvy in the whole of Northern Sweden. In the summer of 1880 it was seen some ten miles south of Bollnäs station; in 1882 it appeared for the first time at Arbrå, about twenty miles further up the railway line; and last year it had travelled as far as Torps parish, in the province of Medelpad, *i.e.* a distance in four years of about one degree.

A CORRESPONDENT writes in reference to Prof. McKenny Hughes' article on earthworms, that the worst consequence of the sea going over the walls in the Somerset low grounds is that it kills the worms, thousands of which come to the surface and die in agony, and the farmers are very sensible of the evil done to the land for a long time afterwards.

MESSRS. CROSBY LOCKWOOD AND CO. inform us that they will shortly publish "A Treatise on Earthy and other Minerals and Mining," by D. C. Davies, F.G.S. The work, which is uniform with and forms a companion volume to the same author's "Treatise on Metalliferous Minerals and Mining," will be fully illustrated. The same publishers announce a work on an entirely new subject, viz. "Stone-working Machinery, and the Rapid and Economical Conversion of Stone, with Hints on the Arrangement and Management of Stone-Works," by M. Powis Bale, M.Inst.M.E., A.M.Inst.C.E. Messrs. Crosby Lockwood and Co. also announce "The Blowpipe in Chemistry, Mineralogy, and Geology," by Lieut.-Col. Ross.

THE additions to the Zoological Society's Gardens during the past week include a Hodgson's Partridge (*Perdix hodgsoniæ*), presented by Mr. W. Jamrach; a Bonnet Monkey (*Macacus radiatus*), presented by Mr. A. King; two Japanese Pheasants (*Phasianus versicolor*), two Egyptian Geese (*Chenalopex ægyptiaca*), a White American Crane (*Grus americana*), thirteen Green Lizards (*Lacerta viridis*), purchased; two Common Vipers, presented by Mr. W. H. B. Pain; a Common Partridge (*Perdix cinerea*), presented by Mr. R. Steele; a Banded Ichneumon (*Herpestes fasciatus*), presented by Master Adams; twelve Variegated Sheldrakes (*Tadorna variegata*), four Soft-billed Ducks (*Hymenolæmus malacorhynchus*), a Bernicle Goose (*Bernicla leucopsis*), an Argentine Tortoise (*Testudo argentina*), presented by Mr. Wm. Petty.

OUR ASTRONOMICAL COLUMN

A NEW COMET OF SHORT PERIOD.—M. Schulhof of Paris has lately ascertained that the observations of the third comet of 1858 (a very limited number) are closely represented by an elliptical orbit with a period of about six years and a half. The comet in question was discovered by Mr. H. P. Tuttle at the Observatory of Cambridge, Mass., on the evening of May 2; it was observed there until May 12, and likewise at Ann Arbor by the late Prof. Watson from May 9 until June 1. Eight observations in all are available for the calculation of the orbit, and upon these M. Schulhof bases four positions, from which he deduces the following elements:—

Perihelion passage, 1858 May 2·96719 G.M.T.

Longitude of perihelion	200° 46′ 27″·1
,, ascending node	175 4 8·5
Inclination	19 30 2·0
Angle of eccentricity	41 21 5·2
Mean daily sidereal motion	536″·881

From these elements we find—

Eccentricity	0·660676	Perihelion distance	1·1950
Semi-axis major ...	3·5217	Revolution ...	6·609 years
,, minor ...	2·6436		

M. Schulhof finds the limits for the mean daily motion 612″ and 470″ corresponding to periods of 5·80 and 7·55 years.

With such elements the comet must approach very near to the orbit of Jupiter, as is the case with nearly all the comets of the short-period group: and with the most probable period (6·6 years) would come into close proximity to the planet in 1879 and 1880. It unfortunately happens that an endeavour to identify this comet with any one of the imperfectly observed comets of past times, or with missing nebulous objects, has so far been fruitless, and hence much uncertainty remains as to the true length of the revolution, but M. Schulhof has prepared sweeping-ephemerides, of which a part is printed in No. 2590 of the *Astronomische Nachrichten:* it contains the sweeping-line for every fourth degree of the sun's true longitude from 40° to 104°. At the time of discovery in 1858 the comet was a very faint object in the comet-seeker, and continued faint during the month that it was observed. To this circumstance and unfavourable weather is attributed its not having been seen at Washington: it was not observed in Europe. Parabolic elements were computed by Profs. Hall and Watson, but no suspicion of periodicity could have arisen from the results of their calculations beyond what comparatively small inclination and direct motion might have suggested; indeed we believe it is somewhere upon record that Prof. Hall considered the tendency was rather towards a hyperbolic orbit. M. Schulhof's merit in drawing the attention of astronomers to the real nature of the comet's path is so much the greater.

Could reliance be placed upon the period given by the few observations in our possession as the most probable one, a return to perihelion might be expected in October next, but as already remarked such period would have brought the comet into close proximity to the planet Jupiter in 1879-80, and the next perihelion passage might be considerably affected thereby. Further, it is to be remarked that with perihelion passage in the middle